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} Associate Editors

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CONTENTS:

Range Extensions of certain Plants on the Gaspé Peninsula. *John H. Pierce* 273

Studies in the Taxonomy and Distribution of the Eastern North American Species of Lobelia (continued). *Rogers McVaugh*.... 276

Notes on Rocky Mountain Plants. *Estelle H. Kelso*..... 298

Prenanthes crepidinea in western New York. *M. L. Fernald*..... 300

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RANGE EXTENSIONS OF CERTAIN PLANTS ON THE GASPÉ PENINSULA

John H. Pierce

At the suggestion of Dr. M. L. Fernald of the Gray Herbarium of Harvard University and Dr. David Potter of Clark University, the author and Mr. Walter H. Hodge of the Massachusetts State College spent the months of June and July, 1934, collecting in the western end of the Shickshock Mountains in Leclerq and Joffre townships, Quebec, Canada.

Since 1920 several parties have collected in the mountains east of the Cap Chat River, but before the author's trip no collecting had been done in the mountains to the west of this area. Dr. Fernald, on trips to Mt. Logan, Mt. Albert and adjacent peaks, found remotely isolated arctic, western and endemic plants indicating an area which escaped continental glaciation of the Wisconsin period.[1] The purpose of the author's trip was to see if western and endemic plants grew in the Shickshock Range west of the area covered by Dr. Fernald.

Six miles west of the Cap Chat River in Joffre township is the first mountain of any size, Mt. Bayfield (3200 ft.). This peak proved to be a botanical disappointment, since it was wooded to the top, with the typical upland Canadian flora. About five miles west of Mt. Bayfield is Mt. Blanc (3500 ft.), where we were delighted to find several exposed areas near the summit. Here on crumbling cliffs of chloritic schist we found the western, the arctic and the "relic" plants listed below. The rock substance of the cliffs was punky and readily crumbled in the fingers. The top was largely covered by an

[1] Fernald, M. L. Persistence of Plants in Unglaciated Areas of Boreal America. Mem. Am. Acad. xv., no. iii. 1925.

STUDIES IN THE TAXONOMY AND DISTRIBUTION OF THE EASTERN NORTH AMERICAN SPECIES OF LOBELIA

Rogers McVaugh

(*Continued from page 263*)

1. L. Cardinalis Linnaeus, Spec. Pl. II: 930. 1753. Type Locality: "Habitat in Virginia." Type Specimen: In Linnaean herbarium in London; seen by Linnaeus before 1753. Photograph seen.—*Trachelium Americanum flore ruberrimo,* Parkinson, "Paradisus Terrestris"; 356. 1629. *Flos Cardinalis,* Rivinus, "Introductio Generalis in Rem Herbarium," with plate, 1690. *Cardinalis Rivini,*

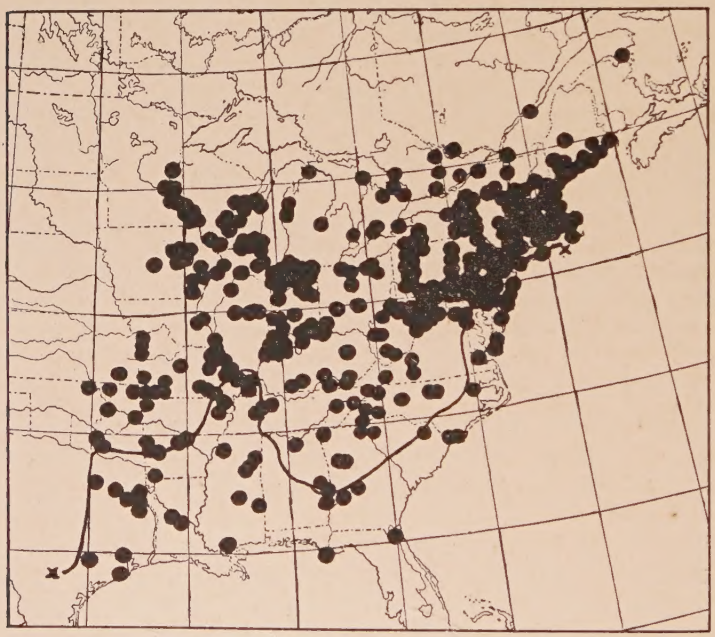

Fig. 3. Range of Lobelia Cardinalis.

Rupp, "Flora Jenensis"; 242. 1718. *Rapuntium maximum, coccineo spicato flore,* Tournefort, "Institutiones Rei Herbariae"; 163. 1719. Plate 51.—Stem erect, unbranched, coarse (sometimes 1.5 cm. in diameter at the base), green, usually dark purplish-red below, sometimes purple-flecked or purplish throughout, 40–180 cm. high, smooth or short chaffy-pubescent. Cauline leaves 10–30, spreading, thin or papery, smooth or short bristly-pubescent, sub-entire in outline, but very irregularly coarsely or finely dentate, the teeth callose-tipped;

size 1.5–4.0 (6.0) × 8–12 (18) cm., often three times as long as broad or longer; lanceolate or lance-ovate to oblong, less often ovate; usually acute at the tip, narrowed at the base, the lower short-petiolate. Perennial by offsets. Roots fibrous. Inflorescence a terminal raceme, unbranched, few–50 cm. long, not noticeably secund, densely (or loosely) few–100 flowered. Pedicels more or less upright, slender, 4–14 mm. long in fruit, short bristly-pubescent, each with a pair of bracteoles at or near the base. Flower-bracts linear or the lower lanceolate, leafy; smooth or nearly so, with prominent callose teeth, 1–5 cm. long. Calyx in anthesis conic or short-campanulate, smooth or somewhat pubescent, becoming cup-shaped or hemispheric in fruit, strongly ribbed, usually broader than high, 8–11 mm. across. Capsule about half inferior. Calyx-lobes linear-subulate, with a short-deltoid base, smooth or ciliate at the tip, 8–16 mm. long. Auricles none, or minute, triangular. Flower 30–45 mm. long, including calyx. Corolla deep crimson (pink or albino forms occur rarely), somewhat puberulent, the lip smooth. Corolla-tube fenestrate; lobes of the lower lip spreading, deflexed, ovate, acute, narrowed at the base, nearly equalling the tube, 3–5 × 13–20 mm.; the two upper lobes erect, linear, 1–2 × 13–20 mm. Filament-tube 24–33 mm. long (ave. 28–30 mm.), much exceeding the corolla-tube, red, pubescent below, connate above more than half its length. Anther-tube 4.0–5.5 mm. long, bluish-gray, the two smaller anthers white-tufted, the three larger smooth or lightly pubescent.—Coastal swamps, river banks, borders of lakes; sometimes in open swampy places; a plant of neutral soil, penetrating acid-soil and dry regions only along river systems. New Brunswick and Ontario to Minnesota, south to Texas and Florida; west of the Mississippi only along rivers (reported from Nebraska by Petersen); throughout the range, but local or absent from large areas such as the Pine Barrens of New Jersey, where conditions are unfavorable.—Flower: late July–early Sept. Fruit: mid-Aug.–Oct. The species is so definite and the range shown in such detail in the map (FIG. 3) that the citation of specimens is unnecessary.

From Kansas and Texas westward the closely related *L. splendens* Willd. is to be distinguished by the (usually) narrower leaves (sometimes narrowly linear), and by the smaller flowers (filaments 20–24 mm., rarely longer, little exceeding the corolla-tube; anther-tube 3–4 mm. long).

The following material has been seen of the closely related plant which is apparently *L. splendens* Willdenow:

MISSOURI: JACKSON: Courtney, *Bush 294* (Mo). NEBRASKA: HITCHCOCK: Culbertson, *Wagner*, Aug. 1911 (W). KANSAS: MCPHERSON: "Linsborg," *Bodin*, Jy. 1887 (M). RILEY: *Hitchcock 316a* (G, Mo, NB, R). OKLAHOMA: BLAINE: Watonga, *Stratton 481* (Mo). CLEVELAND: Norman, *Bruner*, Sep. 1924 (W). OSAGE: Pawhuska, *Stevens 1993* (G). PAYNE: Stillwater, *Waugh 259* (Mo). WOODS:

Alva, *Stevens 2836* (G, M). Texas: "between Ft. Leavenworth and El Paso," *Diffenderfer*, ann. 1871 (ANS). bell: Holland, *Mackensen 235* (Mo). bexar: San Antonio, *Bush 1256* (Mo). comal: New Braunfels, *Lindheimer*, Sep. 1850 (ANS, UP). culberson: Guadalupe Mts., *Moore and Steyermark 3513* (ANS). gillespie: *Jermy herb. 761* (Mo). oldham: "1 mi. N. Canadian R., on Amarillo-Dalhart rd.", *Ferris and Duncan 3481* (Mo, NB). wilson: Sutherland Springs, *Palmer 2090* (ANS). Colorado: yuma: Wray, *Shantz*, Sep. 1907

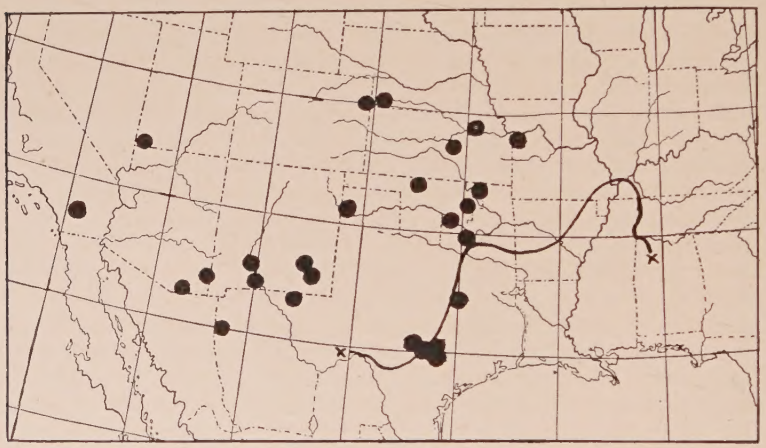

Fig. 4. Northern Extension of Lobelia splendens.

(NB). Utah: washington: Springdale, *Jones 6077* (Del, R); Zion Natl. Park, *Pilsbry*, Aug. 1925 (ANS). New Mexico: bernalillo: Albuquerque, *W. Harward* (Mo). chaves: Roswell, *Earle 497* (M). dona ana: Organ Mts., *Wooton 10644* (NB); "Donana," *Parry et al.* (Mex. Bound. Surv. 694) (ANS). lincoln: White Mts., *Wooton 202* (M, R). sierra: Kingston, *Metcalf*, Aug. 1904 (W). Arizona: cochise: Huachuca Mts., *Lemmon herb. 2806* (ANS, CM); Paradise Falls, *Blumer 1731* (W). California: san bernardino: San Bernardino Mts., *Abrams 2937* (ANS). Chihuahua: Sierra Madre, *Pringle 2287* (ANS); Cumbre, *Palmer 368* (ANS); Chuichupa, *Townsend and Barber 427* (R).

2. L. siphilitica Linnaeus, Spec. Pl. II: 931. 1753. Type Locality: "Habitat in Virginia." Type Specimen: in Linnean herbarium in London; seen by Linnaeus before 1753. Photograph seen. *Rapuntium Americanum, flore dilute caeruleo*, Dodart, "Memoires" 105. 1676 (acc. to Tournefort, Inst. R. H. 163. 1719). *Rapunculus galeatus, Virginianus, flore violaceo, majore*, Morison, "Plantarum historiae" II: 466. 1680. (This is possibly *L. puberula* Mx.). *Lobelia caule erecto, foliis ovato-lanceolatis crenatis, floribus lateralibus*, Linn-

aeus, Hort. Cliff. 426. 1737. The name "*siphilitica*" may have been suggested by Kalm (1750) (*32*). *L. antisiphilitica* Hayne, Arzn. Gewachse. XIII: plate 9. 1837.—Stem erect, unbranched, rather coarse, 20–130 cm. high, light green, quite smooth or sparsely chaffy-hirsute, especially on the angles formed by the decurrent leaf-bases. Cauline leaves few–25, usually loosely spreading, very thin and papery, the lower narrowed into margined petioles; in shape obovate, oblong, ovate or ovate-lanceolate, usually short-acute at the tip, 2.0–4.0 (6.0) × 6–12 (18) cm., nearly smooth beneath, sparingly strigose above; sub-entire in outline, or more or less coarsely serrate, the teeth callose-tipped; upper leaves usually merging gradually into the bracts of the inflorescence. Perennial by offsets. Roots fibrous, rootstock thick. Inflorescence a terminal raceme 10–30 (50) cm. long, usually densely 6–75-flowered, not secund. Pedicels loosely upright, 5–10 mm. long in fruit, more or less flattened, smoothish or chaffy-hirsute, each with a pair of conspicuous bracteoles just below the calyx or 1.5–4 mm. below. Flower-bracts smooth or somewhat ciliate-fringed, the lower (sometimes all) leafy, the upper usually smaller, lanceolate, 1–2 cm. long. Calyx in anthesis flattish-hemispheric, usually more or less chaffy-hirsute, becoming hemispheric in fruit, somewhat flattened (broader than high), 8–10 mm. in diameter. Capsule ½–⅔ inferior. Calyx-lobes foliaceous, broad-lanceolate or ovate, acute or acuminate, often 5–6 mm. wide by 8–11 (14) mm. long, the margins usually much folded back, ciliate and serrate, undulate or crisped. Auricles foliaceous, flat, small or covering the entire calyx, obtuse or acute, sometimes connate, 2–5 mm. long. Flower 23–26 (33) mm. long, including calyx. Corolla bright blue (albino forms sometimes occur), white-striped in the throat; base of the lower lip white, with two raised tubercles; corolla smooth or hirsute on the veins outside. Corolla-tube fenestrate; lobes of the lower lip narrow-ovate, short-acute, sharply deflexed at base, about half as long as the tube, connate below or nearly to the tip: two upper lobes long-acuminate, about as long as the lower. Filament-tube 12–15 mm. long, pubescent below, connate above more than half its length, somewhat deflexed. Anther-tube 4.0–5.5 mm. long, bluish-gray, the two smaller anthers tufted, the three larger smooth.—Moist woods and swampy places; often in light shade; less frequently by streams or in open wet places; a plant of neutral or somewhat calcareous situations. Maine and southern Ontario to eastern Minnesota, south in the Mississippi Valley to Tennessee; common in the Appalachian region, south to Alabama (possibly Mississippi and Louisiana); rare or absent on the south-eastern Coastal Plain. Not common in New England. Flower Aug. 10–Sep. 20. Fruit September to mid-October. Representative material seen: ONTARIO: GREY: Hanover, *Hauch*, Jy. 1895 (W). HASTINGS: Madoc, *Ivey*, Aug. 1906 (Toronto). HURON: Wingham, *Morton*, Jy. 1890 (NB, US). MIDDLESEX: London, *Millman*, herb. G. S. Can. 15259 (O). WELLAND: Niagara Falls, *McCalla 413* (O).

YORK: Toronto, *Hollingsworth 1601* (Toronto). MAINE: AROOSTOOK: Fort Fairfield, *Furbish*, ann. 1881 (NE). CUMBERLAND: Falmouth, *Norton 918* (NE). SAGADAHOC: Topsham, *Hutchins*, ann. 18—(NE). (ALL). MASSACHUSETTS: BERKSHIRE: Sheffield, *Hoffmann*, Sep. 1912 (NE). MIDDLESEX: Cambridge, "Tin Canon," introduced, *Fernald*, Sep. 1891 (G, NE). (ALL). CONNECTICUT: FAIRFIELD: Sherman, *Winton*, Aug. 1885 (G, US). LITCHFIELD: Salisbury, *Weatherby*, Sep. 1914 (US). NEW HAVEN: Derby, *Oakes*, Aug. 1828 (NB). (ALL). NEW YORK: MONROE: Ontario Beach, *Bartram 1797* (ANS). ST. LAWRENCE: Stockholm, *Phelps 1752* (G). TIOGA: Apalachin, *Fenno*

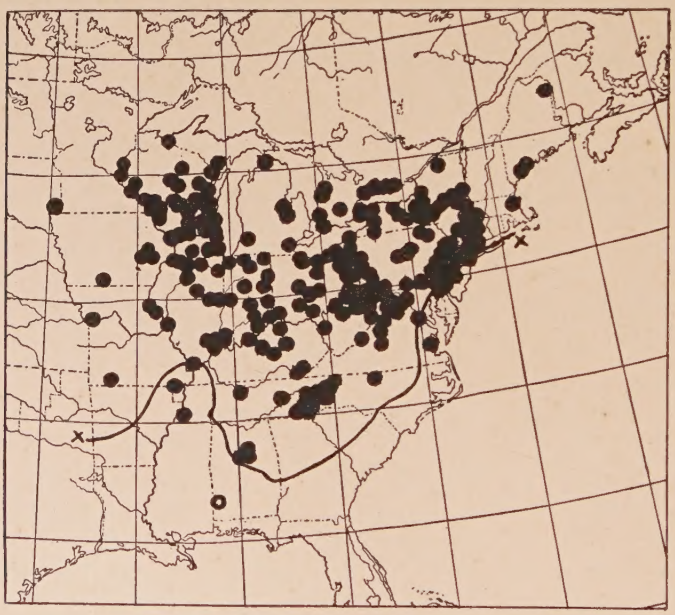

FIG. 5. Range of LOBELIA SIPHILITICA.

261 (NB). WARREN (?): Lake George (no county given), *Mrs. Watrous*, ann. 1895 (NB). NEW JERSEY: BURLINGTON: Moorestown, *Hollinshead* (UP). SOMERSET: Watchung, *Moldenke 6391* (NB). Beside the above, known only from BERGEN, HUNTERDON, SUSSEX, WARREN COS. PENNSYLVANIA: BRADFORD: Sayre, *Barbour 966* (R). CLARION: Lawsonham, *Bright 7342* (W). YORK: McCalls Ferry, *Heller 1280* (ANS, G, NB, US). DELAWARE: NEWCASTLE: Centreville, *Commons*, Sep. 1878 (ANS). (ALL). MARYLAND: CECIL: Fairhill, *Benner 5321* (ANS). GARRETT: Grantsville, *Stone*, Aug. 1911 (ANS). MONTGOMERY: Great Falls, *Holm*, Sep. 1915 (G). DISTRICT OF COLUMBIA: Washington, *Mohr*, Sep. 1882 (US). VIRGINIA:

FAIRFAX: Great Falls, *Wismer 432* (Duke, UP). JAMES CITY: Williamsburg, *Grimes 4580* (M). PAGE: Luray to Stony Man, *Tidestrom 6709* (US). WEST VIRGINIA: BARBOUR: Tygart Jct., *Moore 2584* (G). MONROE: Sweet Springs, *Steele 245* (G, NB, US). NORTH CAROLINA: HAYWOOD: Waynesville, *Biltmore herb. 627a* (G, NB, US). ROCKINGHAM: Spray, *de Chalmot* (US). ALABAMA: CHOCTAW: Cocoa, *Schuchert*, Oct. 1896 (NB). JEFFERSON: Birmingham, *Schuchert*, Oct. 1896 (M, US). ST. CLAIR: Ashville, *Mohr*, Sep. 1899 (US). TALLADEGA: Talladega Creek, *Mohr*, Sep. 1892 (US). (ALL). LOUISIANA: In the ANS collection is a *nearly smooth* specimen perhaps from this state: it is marked "*Tainturier*" (perhaps an error). KENTUCKY: BELL: Cumberland River, *Kearney 462* (M, NB). HARRISON: Lair (Donovan) Pike, *Singer 458* (CCD). NELSON: Chaplin, *Pennell 13670* (ANS). TENNESSEE: CHEATHAM: Craggie Hope, *Svenson 314* (G). COCKE: Lemon's Gap, *Kearney 807* (M, NB, US). SHELBY: Memphis, *Fendler*, Sep. 1853 (G). The last is smaller and smoother than usual, and was identified by Asa Gray as var. *ludoviciana*, but is closer to the typical form. OHIO: HAMILTON: Cincinnati, *Stephenson*, Oct. 1930 (R, UGa). LICKING: Granville, *Jones 1352* (R). OTTAWA: Bay Point, *Eames and MacDaniels 273* (UP). INDIANA: BLACKFORD: Mollie, *Deam 334* (US). DAVIESS: Washington, *Deam 53259* (CCD). ST. JOSEPH: South Bend, *Deam 55578* (CCD). ILLINOIS: COOK: nr. Chicago, *Greenman 3599* (G). PULASKI: Mounds, *Palmer 16564* (ANS). STARK: Wady Petra, *Chase 178* (ANS). VERMILION: Catlin, *Lansing 3501* (G, US, W). MICHIGAN: BAY: Kawkawlin, *Dreisbach 5476* (ANS, UP). DELTA: Escanaba, *Henry 206* (UP). WASHTENAW: Ann Arbor, *Sudworth 267* (US). WISCONSIN: GRANT: Kieler, *Fassett 12525* (W). IRON: Saxon, *Bobb 613* (W). LINCOLN: Merrill, *Cheney 2842* (W). POLK: St. Croix Falls, *Fassett 8195* (W). MINNESOTA: ANOKA: Ham Lake, *Oosting 2987* (approaching the var.) (Duke). GOODHUE: Zumbrota, *Ballard*, Aug. 1892 (NB, US, W). HOUSTON: Jefferson, *Lyon 310* (M). WABASHA: Kellogg, *Fassett 3319* (W). WINONA: moist meadows, *Holzinger*, Sep. 1886 (M). (ALL). IOWA: BENTON: Vinton, *Davis* (W). DECATUR: *Anderson*, Sep. 1904 (R). JOHNSON: Iowa City, *Somes 3597* (US). POWESHIEK: Grinnell, *Jones*, ann. 187– (R). (ALL). MISSOURI: JACKSON: moist ground, *Bush 334* (G, M, NB, US). MARION: Hannibal, *Davis 1220* (G, NB). RALLS: nr. Oakwood, *Davis*, Sep. 1916 (M). ST. LOUIS: "Endroits humides," *Riehl 315* (NB). STODDARD: Dexter, *Bush 6927* (NB, US). STONE: Galena, *Palmer 4614* (R). (ALL). *South Dakota:* MINNEHAHA: Sioux Falls, *Thornber*, Aug. 1892 (G); this plant has smooth leaves, but otherwise resembles closely the eastern form. (ALL).

West of the Mississippi River this species runs into a variety, passing as var. *ludoviciana* A.DC., distinguished as follows:

Var. LUDOVICIANA A. DeCandolle, Prodr. Syst. Veg. VII: 377. 1839. TYPE LOCALITY: "in Louisiana (Tainturier)." TYPE SPECIMEN:

authentic material not seen. DeCandolle's description is as follows: "caule glabro, foliis lanceolatis subintegris glabris, calyce glabriusculo." The plant now passing as var. *ludoviciana* A.DC. is a western one of prairie and mountain regions, perfectly distinct, and fitting DeCandolle's description. However, Tainturier is known to have collected largely on the Coastal Plain of Louisiana (acc. to Pennell), and there is a specimen of *Lobelia siphilitica* in the Academy of Natural Sciences of Philadelphia, marked "Louisiana, Tainturier," which resembles rather material from central Alabama than that from the Northwest. Furthermore, Louisiana a century ago was a much more extensive territory than today. Any positive settlement of the identity of this variety must await examination of authentic material. —*L. Bollii* Wimmer, Fedde Rep. Spec. Nov. XXVI: 3. 1929.—Stem often shorter than in the typical form, 30–60 cm. high (rarely 90 cm. or more), smooth (rarely short-hirsute). Leaves smooth, sub-entire or shallowly toothed, usually oblong-lanceolate, acute at both ends, averaging about 1.5–2.0 × 6.0 cm. Inflorescence often fewer-flowered than in the typical form. Flower-measurements about as in the typical form.

Differs mainly by the shorter average size, smooth leaves and stem, smaller and definitely narrow leaves, smoothish calyx, and the narrower, acute, and often connate auricles. Many intermediate plants appear in the Mississippi Valley.

Low places in prairies, sandy or gravelly margins of ponds and streams, wet meadows, sometimes on limestone cliffs; Wisconsin and Minnesota to Manitoba, south and west to Colorado, Oklahoma and Texas; prairies and mountains. Flowering period about as in the typical form. Representative material seen: (The citations marked with an (*) are those of plants somewhat intermediate between the variety and the type). ILLINOIS: COOK: Des Plaines, *Strahler*, Sep. 1908 (part) (W*). (ALL). WISCONSIN: BURNETT: Hertel, Austin L., *Fassett 8181* (W). DANE: Madison, *Sumner*, Aug. 1895 (W). POLK: Star Prairie, *McLaughlin 1210* (W). ST. CROIX: Hudson, *McLaughlin 1211* (W). WASHBURN: Spooner, *McLaughlin 1207* (W*). (ALL). MINNESOTA: BECKER: DeSoto Lake, *Grant 3069* (ANS, G, M, US). GOODHUE: wet meadows, *Sandberg*, Jy. 1886 (M*). HENNEPIN: Minneapolis, *Sheldon 1662* (M). Fort Snelling, *Mearns*, Aug. 1888 (NB*, US*). LINCOLN: Lake Benton, *Sheldon 1322* (M). RAMSEY: Snail Lake, *Jackson*, Sep. 1926 (UP*). ST. LOUIS: Tower, *Lugger*, Jy. 1891 (M*). WINONA: Winona, *Holzinger*, Aug. 1888 (R*). IOWA: EMMET: Armstrong, *Cratty*, Aug. 1900 (US*). FAYETTE: Fayette, *Fink*, Jy. 1894 (M*) JOHNSON: *Somes A3017* (US*). PLYMOUTH: Akron, *Bredall*, Sep. 1909 (US*). (ALL). MISSOURI: GREENE: Springfield, *Standley 8464* (US). (ALL). ARKANSAS: BAXTER: Baxter, *Palmer 4741* (R). BENTON: *Plank*, ann. 1899 (CM*, NB*). GARLAND: "close to the Hot Springs, Ark.", *Engelmann*, Sep. 1835 (G). (ALL). OKLAHOMA: OTTAWA: Ottawa, *Stevens 2416* (G). (ALL).

Texas: dallas: Dallas, *Reverchon*, Sep. 1875 (G). (ALL). North Dakota: ransom: Lisbon, *Fieldstad*, Aug. 1898 (R). (ALL). South Dakota: Cascade Falls, limestone cliffs, *McIntosh 814* (R). custer: Woodplain Battle Creek, *Over 13746* (R). pennington: Rapid City, *Williams*, Aug. 1892 (US*). roberts: Big Stone Lake, *Over 14298* (US). Nebraska: holt: Beaver Creek, *Clements 2857* (Del, G, M,

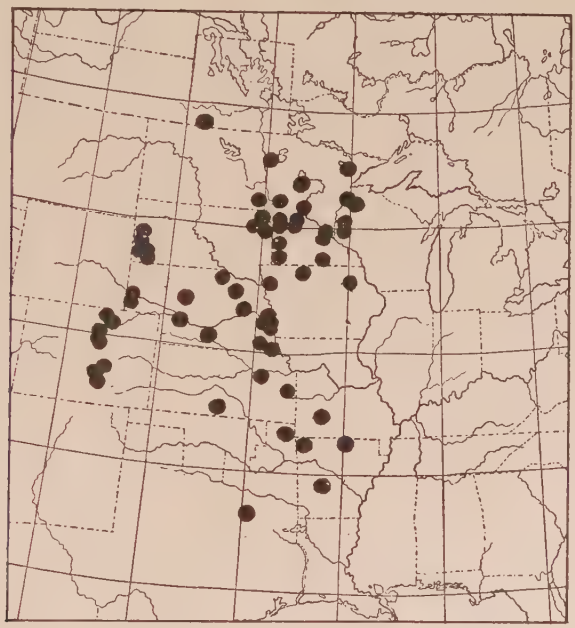

Fig. 6. Range of Lobelia siphilitica, var. ludoviciana.

NB, US). lincoln: North Platte, *Shear 4740* (US). scotts bluff: Scotts Bluff, *Hildreth 520* (R). Kansas: douglas: Lawrence, *Stevens* (US*). kingman: Calista, *Carleton 550* (US). riley: wet places, *Norton 317* (G, NB, R, US). (ALL). Colorado: custer: Wet Mts., *Brandegee 813* (ANS, NB). weld: New Windsor, *Osterhout*, Aug. 22, 1902 (ANS, G, R, W). Manitoba: souris: "Turtle Mt., N.W.T.", *T.J.W.B. 139*, Jy. 26, 1874 (Toronto). (ALL).

3. L. amoena Michaux, Fl. Bor. Am. II: 153. 1803. Type Locality: presumably in Carolina. There is no material of this species in the Michaux herbarium in Paris; the original description, which is given wholly without additional data as to locality or habitat, may apply to the species here included under the name; it applies equally well to *L. elongata* Small. The description follows: "L. majuscula, erecta, glaberrima; foliis lato-lanceolatis, serratis: spica multiflora,

secunda: calycis laciniis integerrimis: corollae coerulae laciniis inferioribus ovalibus, acutis."—*L. siphilitica* ?, Walter, Fl. Car. 218. 1788, referred by Gray to this species, was probably *L. elongata* Small, as was the *L. puberula* var. *glabella*, Elliott, Sk. Bot. S. C. & Ga. I: 267. 1821. Not *L. amaena* A. DeCandolle, Prodr. Syst. Veg. VII: 377, which is a form of *L. puberula* Mx. *L. glandulosa* var. *glabra* A. DeCandolle, l. c. 378 (acc. to Gray).—Stem upright, unbranched, rather coarse, 30–120 cm. high, light green (sometimes reddish at base), smooth or somewhat hirsute-pubescent below. Leaves cauline, rather widely spaced, 6–15, very thin in texture, acute at the base; the lower sub-petiolate; smooth, or pubescent mostly on the veins beneath, and strigose above. Lower leaves sub-entire or somewhat serrate, oblong or ovate, usually obtuse, from 1.5 × 4 to 4.5 × 12–18 cm. Upper leaves narrower, sometimes lanceolate, often prominently denticulate. Bracts (sometimes with the exception of the lowest) not leafy, giving the inflorescence a naked appearance. Inflorescence a terminal raceme, 10–40 cm. long, usually strongly secund, rather loosely few–40 flowered. Pedicels rather slender, curved, 3–5 mm. long in fruit, short prickly-ciliate or smoothish, each with a pair of rather prominent bracteoles (sometimes 1 mm. long) near the base. Flower-bracts smooth, callose-denticulate, linear, 1–2 cm. long; the lowest often leafy, lanceolate or broader, 2–4 cm. long; sometimes all bracts leafy. Calyx in anthesis hemispheric, smooth or with a few hairs, becoming globose or somewhat flattened in fruit, widest about the middle or below, 5–8 mm. across by 4–7 mm. high. Capsule mostly inferior. Calyx-lobes smooth, entire, 5–12 mm. long (ave. 6–8 mm.), flat, linear, less than 1 mm. wide, or the base broad, short-deltoid, the upper portion linear. Auricles none or very small. Flower 18–24 mm. long, including calyx (ave. 20–22 mm.). Corolla bright blue, with a light eye, smooth. Corolla-tube fenestrate; lobes of the lower lip broad-ovate, obtuse, sometimes even spatulate, often apiculate, sometimes as long as the tube; upper lobes lanceolate. Filament-tube 5–7 mm. long, pubescent below, connate only about a third of its length above. Anther-tube 2.5–3.5 mm. long, light bluish-gray, the two smaller anthers tufted, the three larger smooth or pubescent on the backs.

This species is readily distinguished from *L. puberula* and its forms by the general smoothness, the round calyx, narrow calyx-lobes, broad entire leaves, and the somewhat larger corolla, which seems even larger in proportion because of the small calyx-lobes and bracts. However, it is very possible that hybridization occurs where the two grow together; plants are found with intermediate leaf-characters, calyx-characters, and pubescence.—Swamps, moist rich woods or wet rocks, western North Carolina and eastern Tennessee south to northern Georgia and Alabama. Mountains and Piedmont. Flower August–October. Representative Material seen: TENNESSEE: KNOX: Knoxville, *Ruth*, Sep. 1895 (Mo); this plant is on a sheet with two

other species, indicating a possibility of confusion. ALABAMA: CLAY: *Troyer*, ann. 1908 (G). LEE: Auburn, *Earle and Baker*, Oct. 1897 (M, NB). GEORGIA: CLARKE: Oconee Heights, *Reade*, Oct. 1928 (UGa). COBB: Marietta, *Hamlin*, Sep. 1928 (UGa). DEKALB: Stone Mountain, *Small*, Sep. 1894 (ANS, NB). FANNIN: Blue Ridge Mts., *H. H. Smith 2628* (W). HABERSHAM: Toccoa Falls, *Small*, ann. 1894 (NB). RABUN: Tallulah Falls, *Small*, Sep. 1894 (Mo, NB); RICHMOND: Augusta, *Cuthbert*, Sep. 1899 (NB). UNION: Youngcane, *Pennell 14053* (ANS). SOUTH CAROLINA: GREENVILLE: Saluda Falls, *J. D. Smith*, Aug. 1881 (ANS, G, NYS). LEXINGTON: Batesburg, *McGregor 227* (US).

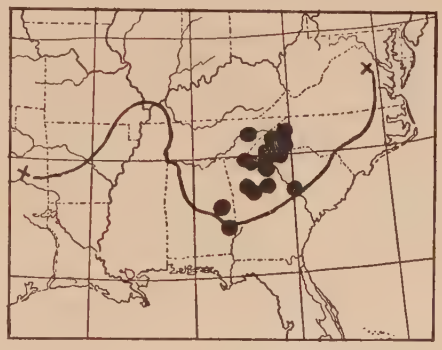

FIG. 7. Range of LOBELIA AMOENA.

NORTH CAROLINA: BUNCOMBE: Biltmore, *Biltmore herb. 622b* (ANS, G, M, Mo, NB, W). HENDERSON: Muddy Creek, *J. D. Smith*, Aug. 1881 (G). MACON: Highlands, *Biltmore herb. 622c* (ANS, G, Mo, NB, UP). POLK: Tryon, *Wherry*, Sep. 1934 (UP). TRANSYLVANIA: Pink Beds, *Biltmore herb. 622a* (G, NB).

4. L. ELONGATA Small, Fl. S.E.U.S. 1144. 1903. TYPE LOCALITY: Northwest, Norfolk Co., Va. TYPE SPECIMEN: *Heller 1246*, in the herbarium of the New York Botanical Garden. Stem upright, unbranched, slender or rather heavy at the base, 30–150 cm. high (120 cm. according to Small), green or with a purplish tinge, darker near the base; smooth. Leaves cauline, few–20, more or less upright-appressed, narrowly lanceolate, sharply dentate or sub-entire, long-acute at both ends, with prominent veins, smooth or strigose; sometimes papillose beneath; average size about 1.3 × 8.5 cm. (0.5–2.5 × 5–12 cm.). Upper leaves gradually smaller, but definitely larger than the bracts of the inflorescence. Inflorescence a terminal raceme 10–30 cm. long (ave. 15–20 cm.), strongly secund, rather densely few–50 (ave. about 20) -flowered. Pedicels rough, 4–7 mm. long in fruit, each with a pair of bracteoles near the base. Flower-bracts smooth, dentate, lanceolate or linear, 1–2 cm. long, inconspicuous or the lowest leafy. Calyx in anthesis short-hemispheric, smooth or with a few hairs, becoming sub-globose in fruit, 6–8 mm. across, broadest at the middle. Capsule mostly inferior. Calyx-lobes smooth, linear-subulate or with a short-deltoid base, 6–13 mm. long (ave. about 9 mm.). Auricles none or very small. Flower 20–25 mm. long, including calyx (ave. 22.5 mm.). Corolla deep blue (acc. to Small), smooth. Corolla-tube fenestrate; lobes of the lower lip broad-ovate or

oblong, shorter than the tube; two upper lobes lance-linear. Filament-tube 8–11.5 mm. long (ave. 9 mm.), pubescent below, connate about half its length above. Anther-tube 4 mm. long, bluish-gray, the two smaller anthers tufted, the three larger pubescent on the backs or nearly smooth.—Swamps, low grounds, tidal marshes; near the coast, Georgia to southern Delaware (south to Florida and west to Louisiana, according to Small). Flower August–October. Representative Material seen: GEORGIA: LIBERTY: nr. Sunbury, *L. LeConte* (NB). SOUTH CAROLINA: BERKELEY: Santee Canal, *Ravenel* (G). DORCHESTER: Summerville, *Brownfield*, Oct. 1892 (Mo). NORTH CAROLINA: COLUMBUS: Whiteville, *Schallert 1647* (Duke). NEW HANOVER: Wilmington, *Williamson*, ann. 1900 (ANS, NB). VIRGINIA: NORFOLK: Northwest, *Heller 1246* (ANS, G, M, Mo, NB, UP). MARYLAND: SOMERSET: Princess Anne, *Canby* (ANS, Del, G, Mo, NB, O, UP). DELAWARE: SUSSEX: Millsboro, *Commons*, Sep. 1877 (ANS, NB).

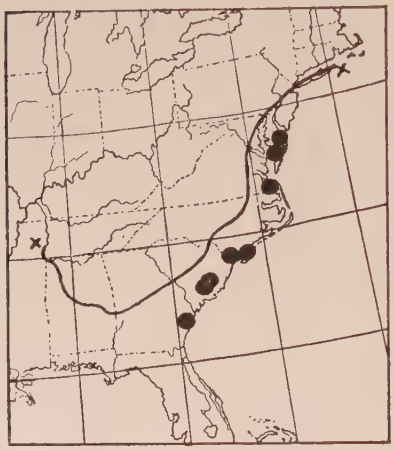

FIG. 8. Range of LOBELIA ELONGATA.

5. L. GLANDULIFERA (Gray) Small, Fl. S.E.U.S. 1144. 1903. TYPE LOCALITY: "S. Virginia to Florida and Alabama." TYPE SPECIMEN: Small gives as a synonym *L. amoena* var. *glandulifera* Gray (Syn. Fl. 4. 1878). Material identified by Gray as this variety, now at the Gray Herbarium and at New York Botanical Garden, is a mixture of two things; the first is the plant called *L. glandulifera* by Small and later authors, and the second seems to be a hybrid of *L. brevifolia* Nutt. The original description of var. *glandulifera* Gray is so worded that it fits either the former, which is smooth and lacks auricles of the calyx-lobes, or the latter, which is hirsute-pubescent and has the calyx decidedly auriculate. In view of this confusion, I am typifying *L. glandulifera* by the element of Gray's material which Small and later authors have treated as a species.—*L. amoena* var. *obtusata* Gray, Syn. Fl. 4. 1878.—Stem upright, slender, rather weak, unbranched, 30–125 cm. high, green or dark purplish-red near the base, smooth or rarely short-hirsute. Leaves cauline, widely spaced, 6–20, spreading, smooth (rarely with a few hairs beneath), thick, with a parchment-like texture and a characteristic bluish-green or gray-green sheen in dried material. Leaves short-ovate or elliptic, broadest at or below the middle, mostly short-acute at both ends, with small sharp regular

teeth or sub-entire, mostly sub-petiolate, averaging about 2 × 5.5 cm. (sometimes 2–3 × 7–12 cm.). Upper leaves distinctly larger than the small flower-bracts, giving the inflorescence a naked appearance. Inflorescence a loose terminal raceme, bearing 1–20 (30) rather widely separated flowers upon stout erect smooth pedicels (2.5–4 mm. long in fruit), each with a pair of bracteoles near the base. Flower-bracts smooth, narrow, 1–2 cm. long, inconspicuous, prominently glandular-toothed or lobed. Calyx in anthesis conic or short-hemispheric, smooth or rarely with a few hairs, becoming hemispheric or sub-globose in fruit, strongly ribbed; mature fruit seen only a few times: somewhat flattened, 4.5–6.5 mm. across by 4.5–6.0 mm. high, usually broadest at the top. Capsule half inferior or more. Calyx-lobes smooth, narrow, nearly linear or with a broad base, 5–8 mm. long, acuminate, with 0–6 prominent glandular teeth. Auricles none or very small. Flower 20–26 mm. long, including calyx, averaging about 22.5 mm. Corolla blue, smooth. Corolla-tube fenestrate; lobes of the lower lip ovate or oblong, broadly obtuse or short acute, often as long as the tube or longer; two upper lobes oblong. Filament-tube 6.5–8.5 mm. long (ave. about 7.5 mm.), pubescent below, connate less than half its length above. Anther-tube 3.0–3.5 mm. long, light bluish-gray, the two smaller anthers tufted, the three larger merely pubescent on the backs.

The following field-notes by A. H. Curtiss (accompanying 6938 in Gray herb.) may be of value:

"A handsome sp., with azure fls. and very thick leaves, growing in low and rich but not wet land. Stem 1–4 ft. long, the lower ¼ bare, the longer ones sprawling about, with only the upper portion erect. Leaves dark green above, whitened beneath, some lower ones with petioles fully 1 in. long. Margins of leaves wavy denticulate—teeth elevated, sinuses depressed. Calyx-teeth with 6–8 curved, subulate teeth."

Low grounds, meadows, swamps, and moist woods, eastern Tennessee and western North Carolina to northern Florida, north to southern Virginia. Mountains, Piedmont, and Coastal Plain. Flower July–November. Representative material seen: TENNESSEE: KNOX: Knoxville, *Ruth*, Sep. 1895 (Mo), possibly an error. FLORIDA: GADSDEN: Quincy, *Chapman* (ANS). HOLMES: Ponce de Leon, *Curtiss 6938* (Del, G, M, Mo, NB). JACKSON: Marianna, *Curtiss 1639* (G, M), as *L. amoena*. LIBERTY: Aspalaga, *Chapman*, Biltmore herb. 6168 (G, M, Mo, NB). GEORGIA: BIBB: Macon, *G. N. Green ?* (ANS). RANDOLPH: Cuthbert, *Harper 1758* (G, Mo, NB). NORTH CAROLINA: BUNCOMBE: Biltmore, *Ashe*, Biltmore herb. 622b (Mo). CATAWBA: Hickory, *Wherry*, Sep. 1934 (UP). DURHAM: Durham, *Martin*, Oct. 1916 (Duke). FORSYTH: Winston-Salem, *Schallert*, Sep. 1921 (Duke, G). LINCOLN: Lincolnton, *Curtis* (Torrey herb., NB). ORANGE: Chapel Hill, *Coker*, Sep. 1909 (NC). PASQUOTANK: Elizabeth City, *Moldenke 108* (NB; a fragment only). WAKE: Raleigh, *Ashe*, Curtiss 6453 (Del, M, Mo, NB). VIRGINIA: HANOVER: Noel, *Brinton*, Oct.

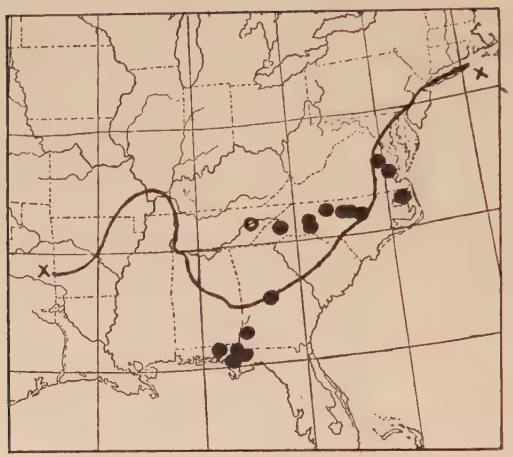

Fig. 9. Range of Lobelia glandulifera.

1890 (NB, UP). JAMES CITY: Ewell, *Grimes 4472* (NB). In the Academy of Natural Sciences of Philadelphia is a specimen collected by Pursh in 1806 in Greensville or Southampton County, Va. This may be a duplicate of one in New York in the Torrey herbarium, labelled "Greenville" and "herb. Barton."

6. L. GLANDULOSA Walter, Flora Carolin. 218. 1788. TYPE LOCALITY: "Carolina Meridialis, ad Ripas Fluvii Santee." TYPE SPECIMEN: There are in the Gray Herbarium a few fragments of what is now passing as *L. glandulosa*, inscribed by Asa Gray "Herb. Walter!" Gray considered this plant to be the *L. glandulosa* of Walter. The description from the "Flora Caroliniana" is given here: "caule erecto subpiloso, foliis oblongis obtuse sublanceolatis subdentatis longitudine florum, flor. axillaribus solitariis purpureis pedunculis brevibus, bracteis 2 glandula terminatis, capsulis villosis, *calycis laciniis dentatis* longis suberectis."—*L. crassiuscula* Michaux, Fl. Bor. Am. II: 152. 1803. Although there is no material of this species in the Michaux herbarium, his description leaves little doubt; he himself, however, indicates doubt that *L. glandulosa* Walt. is a synonym. *L. glandulosa* A. DeCandolle, Prodr. Syst. Nat. VII: 378. 1839 (in part). DeCandolle was confused by what seems to be hybrid material of *L. brevifolia* Nutt. (Torrey herbarium, New York Botanical Garden).—Stem slender, unbranched, weak, erect or ascending, 30–140 cm. long (often tall, 90–100 cm.), smooth, green, or darker below. Internodes sometimes zigzag. Leaves cauline, few–20, smooth, thick, narrowly linear to broad-lanceolate, 0.2–1.4 × 3–15 cm. (ave. about 0.6 × 8 cm.), on the average about 15 times as long as wide, decurrent, not much narrowed at the base except the lowest; somewhat appressed to the stem, strongly callose-denticulate or sub-entire in outline. Upper leaves merging into the floral bracts, but the larger leaves well below the inflorescence. Inflorescence a lax terminal raceme, usually strongly secund, bearing 1–20 (ave. 8–10) rather widely separated flowers upon stout, rough-puberulent or hirsute straight upright pedicels (5–13 mm. long in fruit), each with a pair of bracteoles near the base. Flower-bracts smooth, linear, rarely

much exceeding the pedicels, usually strongly callose-denticulate. Calyx in anthesis short-hemispheric or flatter; smooth, puberulent or long chaffy-hirsute, becoming hemispheric or sub-globose in fruit, 6–8 mm. in diameter. Capsule more than ¾ inferior. Calyx-lobes narrow, almost linear, or broader (long-lanceolate or wedge-shaped), smooth, acute, 3–15 mm. long, usually strongly callose-denticulate; sometimes entire. Auricles none, or small and triangular. Flower 20–33 mm. long, including calyx (ave. 24–25 mm.). Corolla blue with a white eye, smooth except for the pubescent or strongly hirsute base of the lower lip, or pubescent outside also. Corolla-tube fenestrate; lobes of the lower lip oblong or ovate, sometimes acute, about the length of the tube; sometimes reaching a size of 8 × 16 mm.; two upper lobes narrow-ovate, curved upward. Filament-tube 7.5–10 mm. long (usually 8.5–9 mm.), pubescent below, connate above often more than half its length. Anther-tube 3.5–4 mm. long, light bluish-gray, all five anthers tufted, or the three larger merely pubescent on the backs.

This species is very variable in the amount of pubescence of the pedicel and calyx, and in the number of the callose-glandular teeth on the leaves and calyx-lobes. Some individuals are seen with nearly or wholly entire leaves and lobes of the calyx. However, the large flowers and the hirsute lower lip, together with the (usually) linear leaves and stiffly upright pedicels, as well as the long filaments, will usually serve to characterize the plant, even if the glandular teeth are lacking.

Swamps and wet land, often in pineland, Florida to southern Virginia; reported from Mississippi, according to Small. There is in the Academy of Natural Sciences of Philadelphia a somewhat doubtful example of this species, collected by Lindheimer in Texas in 1843. Coastal Plain. Flower Summer and Fall; in Florida more or less throughout the year. Representative material seen: FLORIDA: ALACHUA: Gainesville, *Fawcett*, Nov. 1911 (UP). BREVARD: "Indian River region," *Fredholm 5662* (G). COLUMBIA: Lake City, *Mohr*, Oct. 1895 (Del). DADE: Miami, *Small and Carter 538* (ANS, NB). DUVAL: Jacksonville, *Curtiss 5325* (ANS, Del, M, NB, NYS). FRANKLIN: Apalachicola, *Chapman* (Biltmore herb. 2678b) (G, Mo, NB). GADSDEN: Quincy, *Chapman* (ANS). HAMILTON: White Springs, *Huger*, Dec. 1898 (NB). LEE: Ft. Myers, *Miss Standley 60* (CM, G, Mo, NB). LEON: nr. Tallahassee, *Berg*, (NB). LEVY: *Garber*, Oct. 1877 (ANS, G, Mo, UP). MANATEE: Bradentown, *Tracy*, Oct. 1900 (CM, G, M, Mo, NB, UP). MONROE: Pine Crest, *Moldenke 357* (Duke, Mo, NB, UP). ORANGE: Bithlo, *Moldenke 207* (Duke, Mo, NB, UP). OSCEOLA: Kissimmee, *Mearns 34* (US). PASCO: St. Leo, *O'Neill* (Mo). PINELLAS: St. Petersburg, *Mrs. Deam 2911* (M). POLK: Ft. Meade, *Jennings*, Dec. 1919 (CM). ST. JOHNS: St. Augustine, *Reynolds*, ann. 1877 (NB). SEMINOLE: Sanford, *Moldenke 5348* (NB). VOLUSIA: Deland, *LaForce*, Nov. 1920 (NYS). GEORGIA: BALDWIN:

Milledgeville, *Boykin* (ANS, NB). COLQUITT: Moultrie, *Harper 1663* (G, Mo, NB). GLYNN: Brunswick, *Pennell 4822* (NB, UP). LIBERTY: nr. Sunbury, *L. LeConte* (Torrey herb., NB). PIKE: Zebulon, *Harper 2242* (G, Mo, NB). RICHMOND: Augusta, *J. D. Smith*, Sep. 1883 (G). TATNALL: Reidsville, *Leeds*, Oct. 1933 (ANS). WARE: Manor, *Mrs. Lovett*, Oct. 1933 (Duke). SOUTH CAROLINA: AIKEN: Graniteville, *Eggert*, Aug. 1898 (Mo). BEAUFORT: Hardeeville, *Leeds*, Oct. 1933 (ANS). BERKELEY: Santee Canal, *Ravenel*, Sep. (G). CHARLESTON: Charleston, *Moldenke 143a* (NB). COLLETON: Walterboro, *Leeds*, Oct. 1933 (ANS). DARLINGTON: Hartsville, *Norton*, Nov. 1921 (NC). DORCHESTER: Summerville, *Brownfield*, Oct. 1892 (M, NYS). JASPER: Ridgeland, *Mohr*, Nov. 1895 (Mo). RICHLAND: Columbia, *J. D. Smith*, Sep. 1883 (Mo). NORTH CAROLINA: BRUNSWICK: Wilmington, west of river, *Bartram*, Oct. 1908 (ANS). COLUMBUS: *Schallert*, Nov. 1926 (Duke). JOHNSTON: State Forest Nursery, *Blomquist 6716* (Duke). NEW HANOVER: Wilmington, *McCarthy*, Sep. 1888 (NC). PENDER: *Holmes*, Sep. 1884 (NC). VIRGINIA: *Mr. Bailey*, ann. 1841 (NB); Gray cites the species from "s. Virginia" in his Synoptical Flora, on Bailey's authority. Kearney (*33*) (1901) cites his own 2378, collected "in open fresh-water marshes of the Northwest River" (Norfolk Co., Va.).

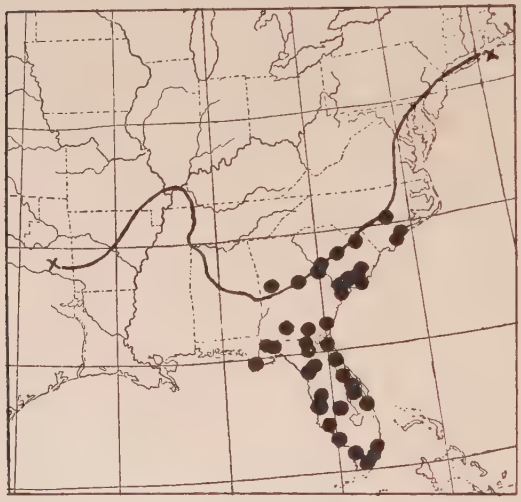

FIG. 10. Range of LOBELIA GLANDULOSA.

7. L. BREVIFOLIA Nuttall, A.DC. Prodr. Syst. Veg. VII: 377. 1839. TYPE LOCALITY: "in Alabama Americae bor.". TYPE SPECIMEN: material from Nuttall's herbarium is in the Academy of Natural Sciences of Philadelphia.—*L. Ludoviciana* Wood, Class Book 476. 1861.—Stem slender, unbranched, rather weak, 30–90 cm. high, smooth or nearly so, green or tinged with purplish-red near the base. Cauline leaves 20–100 (in cases of fasciation 200), close together; linear, oblong, or the lower oblanceolate, short-acute or obtuse, 0.2–0.8 × 0.7–3.0 cm. (ave. 0.5 × 1.5 cm.), strongly pectinately toothed, the teeth callose-tipped. Leaves smooth or somewhat

strigose, decurrent, not much narrowed at the base, except the lowest; the upper more distant and merging gradually into the bracts of the inflorescence. Inflorescence a loose terminal raceme, strongly secund, bearing few–30 (ave. about 15) flowers upon stout, upright, rough or hirsute pedicels (5–10 mm. long in fruit), each with a pair of bracteoles near the base. Flowers often standing stiffly at right-angles to the stem. Flower-bracts smooth or somewhat ciliate beneath, 0.5–1.5 cm. long, inconspicuous, strongly toothed. Calyx in anthesis short-hemispheric, smoothish or densely long-hirsute, becoming sub-globose or hemispheric in fruit. Calyx-lobes broad at the base, 4.5–8.0 mm. long (ave. about 6.0 mm.), long-acute, strongly pectinately toothed, sometimes fimbriate; auricles at the base of each lobe broad, round, foliose, usually as long as the calyx-tube and covering it; sometimes toothed. Flower 15–24 mm. long, including calyx (ave. 18–20 mm.). Corolla pale blue (acc. to Chapman, 1897); azure, acc. to Mohr, 1901; (*9, 45*); pubescent outside, the lower lip smooth or puberulent inside. Corolla-tube fenestrate or sometimes entire except for the dorsal fissure; lobes of the lower lip narrow-ovate, short-acute, shorter than the tube; two upper lobes lanceolate. Filament-tube (5) 6.5–7.0 (8.0) mm. long, pubescent, connate above. Anther-tube 3.5–4.0 mm. long, bluish-gray, all the anthers white-tufted at the tip, or the three larger merely pubescent on the backs.—Damp pinelands, usually in sandy soil, western Florida to eastern Louisiana. Coastal Plain. Flower late Summer and Fall. Representative Material seen: FLORIDA: FRANKLIN: Apalachicola, *Saurman*, ann. 1867 (ANS); *Chapman*, Biltmore herb. 4166a (NB). HOLMES: Westville, *Curtiss 6906* (Del, M, NB). LIBERTY: Aspalaga, *Chapman*, Biltmore herb. 4166b (NB). ALABAMA: LEE: Auburn, *Earle*, Oct. 1896 (CM). MOBILE: Mobile, *Mohr* (ANS). MISSISSIPPI: HARRISON: Pass Christian, *Langlois*, Oct. 1882 (CM, NYS, UP). LOUISIANA: ORLEANS: New Orleans, *Ingalls* (Torrey herb., NB). In the Schweinitz herbarium at the Academy of Natural Sciences of Philadelphia is a specimen marked "Louisiana, Tainturier."

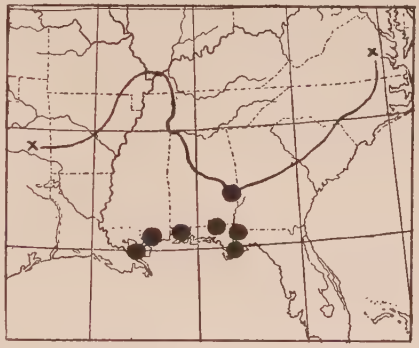

FIG. 11. Range of LOBELIA BREVIFOLIA.

Occasionally, plants are met with that show resemblances to the above species, and may be of hybrid origin; possible parents are *L. brevifolia* and *L. puberula:*

L. BREVIFOLIA × L. PUBERULA.—*L. glandulosa* A. DeCandolle,

Prodr. Syst. Veg. VII: 378. 1839 (in part). *L. amoena* var. *glandulifera* Gray, Syn. Fl. 4. 1878 (in part).—Leaves broad, more or less pubescent, inclined to be dentate. Calyx-lobes more or less strongly glandular-toothed; auricles round, rather small, but conspicuous. Calyx smooth or hirsute. Filaments sometimes reaching 9.0 mm. in length. Material seen: Florida: "west Florida," *Chapman* (NB). Alabama: *Gates* (G, NB), both identified as *L. amoena* var. *glandulifera* by Asa Gray; the one at New York named *L. glandulosa* by DeCandolle. lee: Auburn, *Earle*, Sep. 28, 1896 (CM); *Earle*, Oct. 4, 1896 (NB); *Earle*, Oct. 15, 1896 (CM, NB). mobile: *Graves 1119* (Mo). Mississippi: Kashtaw, *Tracy 4940* (NB). harrison: Biloxi, *Tracy*, Oct. 27, 1899 (NB). jackson: Ocean Springs, *Earle*, Oct. 27, 1889 (CM).

8. L. puberula Michaux, Fl. Bor. Am. II: 152. 1803. Type Locality: "Carolina." Type Specimen: There is no material of this species in the Michaux herbarium in Paris. The original description, which follows, seems to fit no other species than the one to which it is now given:

"L. erecta, simplicissima, pubescens: foliis oblongo-ovalibus, obtusis, repando-serrulatis: spica non pedunculata; floribus paucis, alternis, subsessilibus: calycibus ciliatis."

The nomenclature of this species and its forms has been in considerable confusion. DeCandolle, in the "Prodromus," seems to confuse several plants. In the absence of type material, and in view of the variability of the forms, it seems impossible at present to determine the exact identity of *L. puberula* of Michaux.

L. puberula var. *glabella* Elliott, Sk. Bot. S. C. & Ga. I: 267. 1821. is probably *L. elongata* Small.

L. puberula var. *glabella* Hooker, Bot. Mag. LXI: plate 3292. 1834. is probably the smoothish form found on the Gulf Coastal Plain.

Stem strict, usually unbranched, 30–160 cm. high, often 100 cm., green or sometimes with a purplish tinge throughout, darker below, densely short-hirsute throughout, or sometimes glabrate. Cauline leaves few–40, hairy beneath and more or less strigose above, especially near the margins; thin but fairly firm in texture; shape varying from lanceolate-acute, sub-entire in outline, with prominent callose-denticulate teeth, to broadly obovate, obtuse, with coarse irregular serrations and inconspicuous callose teeth. Upper leaves merging gradually into the bracts of the inflorescence, becoming more finely toothed above. Basal leaves none. Inflorescence a terminal unbranched raceme 4–50 cm. long (ave. 15–30 cm.), densely flowered or often somewhat interrupted; often distinctly secund, bearing few–70 flowers upon short stout puberulent or hirsute pedicels (3–5 mm. long in fruit), each with a pair of bracteoles at the base or somewhat above it. Pedicels not stiffly erect. Flower-bracts various. Calyx in anthesis flattish or short-hemispheric, more or less pubescent, or hirsute, becoming hemispheric in fruit, widest at the top, usually with

a flaring rim, prominent ribs and a rough angular appearance; 5–9 mm. across by 4–7 mm. high. Capsule about half inferior. Calyx-lobes lanceolate or broader, plainly broader near the base than near the tip, more or less straight-sided, without definite subulate tips, 5–12 mm. long, usually ciliate at least near the tip. Auricles very small and triangular, or rounded, short, formed of the rolled edges and lobes of the cordate calyx-lobes. Flower 15–24 mm. long, including calyx (ave. 18–20 mm.). Corolla blue, with a white eye, ciliate at least on the veins outside, the lip smooth. Corolla-tube fenestrate; lobes of the lower lip oblong or ovate, usually somewhat shorter than the tube, acute or obtuse; two upper lobes lanceolate, erect. Filament-tube 6–7 mm. long (rarely 9 mm.), pubescent below, connate about a third of its length above. Anther-tube 3.0–3.5 mm. long, light bluish-gray, the two smaller anthers tufted at the tip, the three larger usually pubescent on the backs.—Wet woods, low grounds, thickets, in various soils; Coastal Plain and upland provinces, Tennessee and western North Carolina north to West Virginia, southern Indiana and Illinois; northeast along the Coastal Plain from South Carolina to southern New Jersey; south to Florida, Alabama and Mississippi; west and south to Missouri, Arkansas, Oklahoma, Texas and Louisiana. Flower August 1 (rarely earlier) through the Fall.

A wide-ranging species showing several pronounced geographic forms which may or may not be worthy of varietal names; the most conspicuous are as follows:

a) A form with what may be called an Alleghanian range; rarely found on the Coastal Plain or in glaciated country; native from West Virginia south to mid-Georgia, west to Illinois and western Tennessee. In its most characteristic form it may be identified by the rather sparsely pubescent calyx-tube and lobes, small (1–1.5 cm. long) bracts, which are lanceolate or nearly linear, the narrow calyx-lobes (1.5–2.0 mm. wide by 5–12 mm. long), which are usually flat or slightly rolled on the margins to form small auricles; the leaves are often spreading rather than appressed, usually prominently callose-denticulate, even the lowest sometimes acute, tending to be three times as long as wide, or longer. This plant may be the closest, now living, to a hypothetical ancestor living in approximately the same area. Several lines of divergence from this type may be seen, leading to at least three others. Representative Material seen: VIRGINIA: BEDFORD: *Curtiss*, Sep. 1873 (Mo, NYS). WASHINGTON: Damascus, *Core 3883* (NB, WVa). WYTHE: Wytheville, *Shriver*, Sep. 1878 (ANS, G). WEST VIRGINIA: MARION: Winfield Twp., *Sharp*, Sep. 1929 (WVa). MONONGALIA: *Rumsey*, Sep. 1897 (WVa). MONROE: Peters Mt., *Steele 172* (G, Mo, NB). RITCHIE: Auburn, *Randolph 1393* (G). UPSHUR: Buckhannon, *Pollock*, Sep. 1895 (Mo). WIRT: Elizabeth, *Bartholomew 304* (WVa). NORTH CAROLINA: ASHE: *Ashe*, Aug. 1891 (NC). BUNCOMBE: Asheville, *Redfield 5635* and *5636* (Mo). BURKE: Morganton, *Moses*, ann. 1914 (NC). DURHAM: Duke Forest, *Oosting*

33326 (Duke). FORSYTH: Winston-Salem, *Schallert*, Aug. 1925 (Duke). HAYWOOD: Lake Junaluska, *Blomquist 5019* (ANS, Duke). HENDERSON: "Chimney Rock to Hendersonville," *Small and Huger*, Oct. 1901 (NB). JOHNSTON: Parkers Pond, *B. E. Smith*, Sep. 1932 (NC). ORANGE: Chapel Hill, *Coker*, Sep. 1914 (NC). PERQUIMANS: *Glasson* (Duke): PERSON: Roxboro, *Wherry*, Sep. 1934 (UP). SWAIN: Great Smoky Mts., *Beardslee and Kofoid*, ann. 1891 (G, M, Mo, NB, WVa). SOUTH CAROLINA: ANDERSON: Anderson, *Davis 8424* (Mo). GREENWOOD: Greenwood, *Bartram 3313* (ANS). LEXINGTON: Batesburg, *McGregor 66* (US). OCONEE: Clemson College, *House 2892* (Mo). GEORGIA: CLARKE: Athens, *Wiegand and Manning 3089* (G). DEKALB: Stone Mountain, *Small*, Sep. 1894 (Mo, NB). FLOYD: Rome, *Canby*, Oct. 1898 (Del, Mo). JASPER: Monticello, *Porter*, ann. 1846 (ANS). LAMAR: Barnesville, *Hamlin*, Aug. 1928 (UGa). MUSCOGEE: Columbus, *Boykin* (NB). RABUN: Tallulah Falls, *Small*, Sep. 1894 (Mo). RANDOLPH: Cuthbert, *Harper 1734* (G, Mo, NB). RICHMOND: Augusta, *Cuthbert*, Sep. 1898 (NB). ALABAMA: CHEROKEE: Center, *Leeds*, Oct. 1934 (ANS). CULLMAN: Cullman, *Eggert*, Sep. 1897 (CM, Mo, NB). JEFFERSON: Birmingham, *Vasey*, ann. 1878 (ANS). LEE: Auburn, *Earle and Baker*, Sep. 1897 (M, Mo, NB). MOBILE: *Graves 1194* (Mo). TUSCALOOSA: Tuscaloosa, *Johnson* (NB); *L. puberula* var. *glabella*, fid. A. Gray. MISSISSIPPI: HARRISON: Biloxi, *Tracy 4942* (CCD, NB). JACKSON: Ocean Springs, *Skehan*, Sep. 1895 (Mo). LAUDERDALE: Meridian, *Schuchert*, Oct. 1896 (NB). FLORIDA: DUVAL: Jacksonville, *Curtiss 5565* (Del, G, M, Mo, NYS). MANATEE: Terra Ceia Island, *Simpson 411* (G, NB). LOUISIANA: BOSSIER: Alden Bridge, *Tracase*, Oct. 1898 (Mo). KENTUCKY: BELL: Pine Mountain, *Kearney*, Sep. 1893 (G, M, Mo, NB). CARTER: Olive Hill, *Svenson 4409* (ANS, CCD, G). EDMONSON: Mammoth Cave, *Leeds*, Oct. 1934 (ANS). FAYETTE: Lexington, *C. W. Short* (W). HARDIN: Vertrees, *Pennell 13627* (ANS). LAUREL: London, *McFarland 251* (Mo). LINCOLN: Kings Mountain, *Pennell 13746* (ANS). LYON: Kuttawa, *Eggleston 5195* (NB). MC CREARY: Parkers Lake, *Pennell*

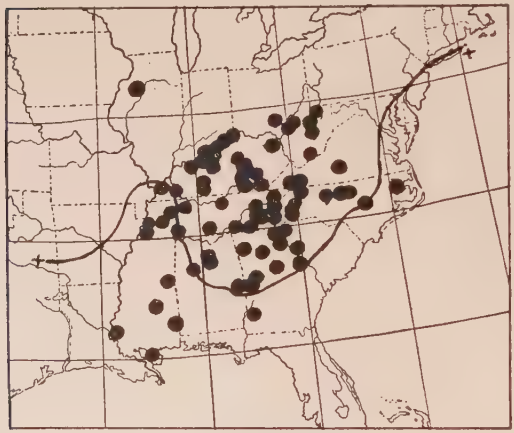

FIG. 12. Range of LOBELIA PUBERULA, Form A.

13801 (ANS). PULASKI: Floyd, *Pennell 13758* (ANS). WARREN: Bowling Green, *Price*, Jy. 1894 (Mo). TENNESSEE: BLOUNT: Chilhowee Mt., *Curtiss 1636* (ANS, CM, G, M, Mo, NB). CARROLL: Hollow Rock Jct., *Svenson 453* (ANS, G). CARTER: Roan Mt. Sta., *Rydberg 8180* (NB). COCKE: "Paint Rock to Del Rio," *Kearney 806* (M, Mo, NB). DICKSON: White Bluffs, *Eggert*, Aug. 1897 (Mo). FRANKLIN: Sewanee, *Eggert*, Sep. 1898 (Mo). HAMILTON: Chattanooga, *Lippincott*, Sep. 1895 (ANS). KNOX: Knoxville, *Ruth*, Sep. 1895 (M, Mo, W). MADISON: Jackson, *Bain 313* (NB). POLK: Reliance, *Pennell 14004* (ANS). PUTNAM: Cookeville, *Hudson 105* (R). SEVIER: "Great Smoky Mts.," *Schallert*, Sep. 1933 (NB). SHELBY: Memphis, *Fendler*, Sep. 1853 (G). TIPTON: Covington, *Rhoades*, Jy. 1927 (W). WAYNE: Waynesboro, *Svenson 4304* (ANS, G). OHIO: HOCKING: Queer Creek, *Griggs*, Aug. 1910 (G). INDIANA: CLARK: State Reserve, *Deam 5440* (CCD). CRAWFORD: Leavenworth, *Deam 18566* (CCD). DEARBORN: Manchester, *Deam 30126* (CCD). HARRISON: New Middletown, *Deam 18725* (CCD). JEFFERSON: Kent, *Deam 35293* (ANS). PERRY: Cannelton, *Deam 33211* (CCD). VANDERBURGH: Evansville, *Deam 33115* (CCD). ILLINOIS: HENRY: Galva, "*A. B.*" (Horner herb.) (G). JACKSON: Makanda, *Vasey*, Aug. 1862 (G). PULASKI: Karnak, *Palmer 16554* (ANS, Mo). UNION: Cobden, *Earle*, Sep. 1878 (CM).

b) Common on the southeastern Coastal Plain and adjacent Piedmont, New Jersey and Pennsylvania south to Georgia, is a plant distinguished by a densely long-hirsute calyx, with broad calyx-lobes (2.5–5.0 mm. wide by 5–12 mm. long), which are often undulate or crisped on the margins, with rounded auricles formed by the reflexed margins and the lobes of the cordate base. Bracts usually leafy, broad at the base, 1–2 cm. long; leaves more or less closely appressed to the stem, acute above, but usually obtuse and obovate below, often entire in outline or irregularly coarsely serrate, but not conspicuously callose-denticulate. Representative Material seen: GEORGIA: CHATHAM: Savannah, *Nuttall*, herb. J. Gay (G). LIBERTY: nr. Sunbury, *L. LeConte* (NB). WALTON: Loganville, *Small*, Sep. 1894 (NB). SOUTH CAROLINA: AIKEN: Aiken, *Ravenel*, Sep. 1866 (Mo). CHARLESTON: Charleston, *Backman* (ANS). NORTH CAROLINA: HALIFAX: Weldon, *Bartram*, Oct. 1908 (ANS, NB). PASQUOTANK: Elizabeth City, *Moldenke 108* (Duke, Mo, UP). ROWAN: Salisbury, *Heller*, Aug. 1890 (ANS, M, Mo, NB). VIRGINIA: ACCOMAC: Franklin City, *Brown*, Sep. 1907 (ANS). ARLINGTON: Fort Myer, *Mearns 134* (NB). FAIRFAX: Great Falls, *Wismer 433* (UP). JAMES CITY: Williamsburg, *Grimes 4434* (M); *4388* (G, NB). NORFOLK: Northwest, *Heller 744* (Mo). PRINCE GEORGE: New Bohemia, *Pennell 14426* (ANS). PRINCESS ANNE: Virginia Beach, *Heller 1335* (ANS, NB). DISTRICT OF COLUMBIA: *M. S. Bebb*, ann. ca. 1863 (ANS, G); Takoma Park, *House 1532* (Mo); *323* (NB). MARYLAND: ANNE ARUNDEL: Leon, *Shull 259* (Mo, NB). BALTIMORE: Catonsville, *Foreman*, ann. 1873 (NB). CECIL: North East, *J. P. Otis ? P479* (herb. R.R.T.).

KENT: Golts, *Brown*, Sep. 1907 (ANS). PRINCE GEORGES: Ammendale, *Bro. Hyacinth 1177* (Mo). QUEEN ANNES: Centerville, *Norton*, Jy. 1903 (Mo). WORCESTER: Snow Hill, *Moldenke 6618* (NB). DELAWARE: KENT: Little Creek, *Larsen 311* (UP). NEWCASTLE: Newark, *Commons*, Sep. 1869 (ANS). SUSSEX: Rehoboth, *Churchill*, Sep. 1908 (G). PENNSYLVANIA: CHESTER: Nottingham, *Bartram 1771* (ANS).

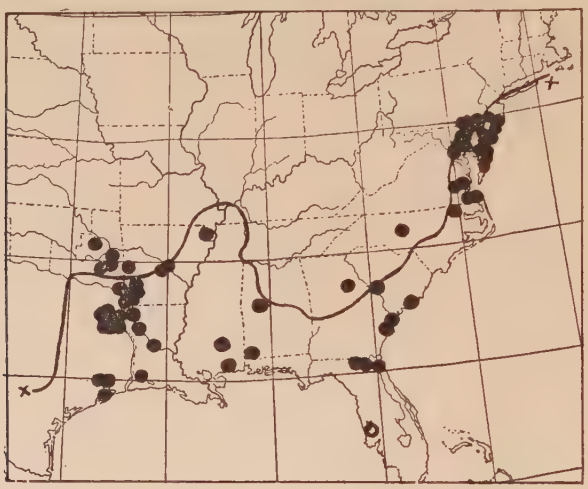

FIG. 13. Combined Ranges of Forms of LOBELIA PUBERULA, excepting Form A.

DELAWARE: Bethel-Concord line, *Pennell*, Oct. 1908 (ANS). LANCASTER: Pleasant Grove, *Small and Carter*, Sep. 1908 (ANS, NB). YORK: Castle Fin, *Crawford*, Aug. 1895 (ANS). NEW JERSEY: ATLANTIC: Leeds Point, *Gray*, Sep. 1833 (G). BURLINGTON: Hartford, *Long 4878* (ANS, UP). CAPE MAY: Cape May, *Mackenzie 4444* (CCD, G, Mo). CUMBERLAND: Bayside, *Fogg 7445* (ANS). OCEAN: Manahawkin, *Long*, Sep. 1909 (ANS).

c) In the southern states, Alabama to Louisiana, especially on the Coastal Plain, form (a) above becomes practically smooth. This has been called var. *glabella* Hooker, by American authors. Representative Material seen: ALABAMA: MOBILE: Theodore, *Pennell 4486* (UP). MISSISSIPPI: CLARKE: Shubuta, *Schuchert*, Oct. 1896 (NB). SCOTT: Forest, *Cook*, Aug. 1925 (US). WILKINSON: *Phares*, Sep. 1868 (Miss). LOUISIANA: ORLEANS: New Orleans, *Torrey* (G). TEXAS: VICTORIA: "Missions valley near the Guadeloupe River above Victoria," *Schott*, Oct. 1851 (NB); this plant is perhaps only a depauperate specimen of some other form of this species.

d) From Missouri and Arkansas southward to eastern Oklahoma and Texas, and eastward to Alabama and southern Mississippi

occurs a plant resembling that of the Atlantic Coastal Plain, but with large leafy *lanceolate* bracts (usually not broad at the base), the calyx often smoothish or merely strigose. Auricles well-developed and sepals broad. Leaves often hairy, more or less appressed to the stem or loose, often with conspicuous sharp small teeth, each callose-tipped.—*L. puberula* var. *mineolana* Wimmer in Fedde Rep. Spec. Nov. XXVI: 4. 1929.—Representative Material seen: ALABAMA: DALLAS: *Trelease*, ann. 1879 (Mo). WASHINGTON: Fruitdale, *A.G.J.*, Oct. 1903 (Mo). MISSISSIPPI: SMITH: Taylorsville, *Tracy*, Aug. 1903 (NB, US). LOUISIANA: CADDO: Shreveport, *Gregg*, Sep. 1847 (Mo). CALCASIEU: Lake Charles, *Mackenzie 528* (Mo, NB). NATCHITOCHES: Natchitoches, *Palmer 8714* (Mo, NB). RAPIDES: Alexandria, *Hale* (ANS). MISSOURI: DUNKLIN: *Bush*, Sep. 1893 (Del, G, Mo). ARKANSAS: HEMPSTEAD: Columbus, *Palmer 6838* (Mo). HOT SPRING: Malvern, *Palmer 8462* (Mo, NB). HOWARD: Baker Springs, *Kellogg*, Oct. 1899 (Mo). MILLER: Texarkana, *Palmer 14634* (Mo). POLK: Rich Mountain, *Trelease*, Oct. 1898 (Mo). PULASKI: Little Rock, *Demaree 8163* (CCD, G, Mo, NB); Little Rock, *Hasse*, ann. 1886 (M, NB, NYS); all material seen from Pulaski Co., seems to have rather large flowers. SALINE: Benton, *Greenman 4302* (Mo). OKLAHOMA: CREEK: Sapulpa, *Pennell 5395* (NB, UP). HASKELL: Sans Bois Mts., *Sheldon 310* (Del, NYS). LATIMER: Wilburton, *Stratton 603* (Mo). MC CURTAIN: Broken Bow, *Stratton 574* (Mo); this plant has oversize flowers. PITTSBURG: McAlester, *Sheldon 310* (Mo). TEXAS: *Drummond* (NB); *Lindheimer*, ann. 1843 (G). ANDERSON: *Palmer 10721* (Mo). AUSTIN "S. Felipe de Austin," *Drummond* (G); this is the *L. amoena* of A.DC., according to Asa Gray. BOWIE: Texarkana, *Heller 4166* (ANS, G, Mo, NB). BRAZORIA: Columbia, *Bush 1530* (Mo, NB). CHEROKEE: Jacksonville, *Palmer 8593* (Mo, NB). GREGG: Longview, *Eggert*, Aug. 1898 (Mo). HARRIS: Houston, *Lindheimer*, Sep. 1842 (Mo). HARRISON: Marshall, *Bush 782* (Mo). MONTGOMERY: Willis, *Warner* (Mo). PANOLA: Beckville, *Reverchon 3204* (G, Mo, NB). RUSK: "auf Prärien an Waldrändern," *Vinzent, tex. Pfl. 60* (Mo). SMITH: Tyler, *Reverchon 2086* (Mo). UPSHUR: Big Sandy, *Reverchon 3205* (G, Mo, NB). WOOD: Mineola, *Reverchon*, Aug. (Mo); presumably the type of var. *mineolana*.

In addition to the above, a few specimens have been seen of the plant designated as

L. PUBERULA, var. PAUCIFLORA Bush, Ann. Rep. Mo. Bot. Garden 17: 122. 1906.—TYPE LOCALITY: Swan, Smith Co., Texas. TYPE SPECIMEN: *Reverchon 3206*, Sep. 17, 1902; seen in Missouri Botanical Garden. Stems slender, densely white-pubescent. Leaves thin, oblong, hirsute. Calyx and pedicel densely long-hirsute. Flowers 3–15 in number, larger than in *L. puberula*. Filament-tube 8–11 mm. long. This plant seems quite distinct, and may deserve specific rank, but as so little material has been seen, it seems best to leave its status unchanged. Material seen: LOUISIANA: NATCHITOCHES: Natchitoches,

Palmer 8905 (NB). RAPIDES: Alexandria, *J. Hale* (G, Mo, NB). TEXAS: SMITH: Swan, *Reverchon 3206* (Mo).

(To be continued)

NOTES ON ROCKY MOUNTAIN PLANTS

ESTELLE H. KELSO

IN Plants of the Rocky Mountain National Park, U. S. Dept. of the Interior, Natl. Park Service, 1–157. 1933, R. E. Ashton treated all the ferns and seed plants then known to occur in that area. The following is a list of plants found there which were not reported in that work. All collections and observations were made within half a mile of Bryson's Camp on Fall River unless otherwise stated. Numbers under 100 were collected by L. Kelso and the writer, higher numbers by the former.

ORYZOPSIS ASPERIFOLIA Michx. Aspen groves and rocky slopes.

STIPA COLUMBIANA Macoun. Dry ground near Sheep Lake, June 18, 1933; no. 35.

MUHLENBERGIA FILIFORMIS (Thurb.) Rydb., var. **fortis**, var. nov. *Sporobolus simplex* Scribn., U. S. Dept. Agr. Div. Agrost. Bull. **11**: 48. 1898. *Muhlenbergia simplex* Rydb., Bull. Torr. Bot. Club **32**: 600. 1905. Not *M. simplex* Kunth, 1829.

Many plants of this species growing around Sheep Lake were consistently different from the typical form in having the stems 1 mm. or more thick, and the lemmas over 2 mm. long.

ALOPECURUS GENICULATUS L., var. ARISTULATUS Torr. In shallow water along Bighorn Creek, August 5, 1931; no. 3554.

AVENA HOOKERI Scribn. Near Lawn Lake, August 5, 1931; no. 3662.

POA REFLEXA Vasey and Scribn. Common in thickets of the aspen association in August.

GLYCERIA STRIATA (Lam.) Hitch., var. STRICTA (Scribn.) Fernald. Common in damp ground along Fall River and Bighorn Creek during August.

FESTUCA KINGII (S. Wats.) Cassidy. Dry soil near Sheep Lake, June 18, 1933; no. 34.

BROMUS SECALINUS L. Occasional in a pasture along Bighorn Creek.

BROMUS BRIZAEFORMIS Fisch. and Mey. Common in dry soil along roads.

ELEOCHARIS PALUSTRIS (L.) R. and S., var. MAJOR Sonder. Bog near Bryson's Camp, June 21, 1933; no. 42. Also grew along margin of Sheep Lake and near Cub Lake.

ELEOCHARIS ACICULARIS (L.) R. and S. Damp ground around Sheep Lake, August 4, 1931; no. 3660.

CAREX PARRYANA Dewey. Damp meadows near Cascade Lodge, June 16, 1933; no. 73.

CAREX NOVA Bailey. Occasional on grassy slopes near Lawn Lake.

CAREX ATHROSTACHYA Olney. Damp ground near Lawn Lake, August 5, 1931; no. 3616.

CAREX HELIOPHILA Mackenzie. Common in inceptive and mixed grasslands below 9,000 feet.

CORALLORHIZA WYOMINGENSIS Hellmayr. Damp ground near Bighorn Creek.

SALIX BRACHYCARPA Nutt. Bogs near Cascade Lodge, alt. 8,500 feet, June 20, 1933; no. 1.

SALIX GEYERIANA Anders. Abundant along west margin of Sheep Lake and in bog near Cascade Lodge.

STELLARIA LONGIPES Goldie. Damp ground near Cascade Lodge, June 20, 1933; no. 9.

ARAGALLUS DEFLEXUS (DC.) Heller. Common in thickets near streams.

PEDIOCACTUS SIMPSONI (Engelm.) Britton and Rose. Occasional in mixed grassland.

EPILOBIUM HORNEMANNI Reichenb. Bogs near Lawn Lake, August 5, 1931; no. 3557.

EPILOBIUM OVATIFOLIUM Rydb. In spring near Cascade Lodge.

MYRIOPHYLLUM VERTICILLATUM L., var. PECTINATUM Wallr. Sheep Lake, June 16, 1933; no. 71.

VERONICA SERPYLLIFOLIA L. Damp ground near Bryson's Camp, August 5, 1931; no. 3621.

UTRICULARIA VULGARIS L., var. AMERICANA A. Gray. Common in shallow water near Cub Lake.

PLANTAGO ASIATICA L. Found in golf course near Estes Park.

GALIUM APARINE L. Common in the aspen association along Fall River.

GALIUM TRIFIDUM L. Occasional in damp ground near Fall River.

ERIGERON TRIFIDUS Hook. Occasional on rocky slopes near Bryson's Camp.

PETASITES SAGITTATUS (Pursh) A. Gray. Damp ground near Bryson's Camp, alt. 8,300 feet, June 21, 1933; no. 22.

SENECIO CANUS Hook., var. PURSHIANUS (Nutt.) A. Nels. Occasional on rocky slopes near Lawn Lake.

SENECIO SAXOSUS Klatt. Occasional on rocky slopes near Fall River Pass.

CIRSIUM AMERICANUM (A. Gray) K. Schum. Along road up north side of Long's Peak.

CIRSIUM HOOKERIANUM Nutt. Occasional on rocky slopes above Ypsilon Lake and Lawn Lake.

TRAGOPOGON PRATENSIS L. Occasional along lower part of trail to Ypsilon and Lawn Lakes.

To the above may be added 3 plants recently described from the park, Atragene Columbiana Nutt., f. albescens E. H. Kelso, Rhodora **35**: 347. 1933, Salix pseudolapponum v. Seeman, var. subincurva E. H. Kelso, l. c. **36**: 195. 1934, and Castilleja flavoviridis L. Kelso, Madrono **1**: 241. 1929.

Washington, D. C.

Prenanthes crepidinea in western New York.—In 1882, in his *Plants of Buffalo and its Vicinity*, David F. Day recorded *Prenanthes crepidinea* Michx. as

> Very rare. Wheelbarrow Pt., Buffalo. Only two plants seen, and those not lately. Some doubt exists as to the species, but it surely better corresponds with *P. crepidina* than with any other described in Gray's Manual.

Subsequently further doubt has been expressed regarding the occurrence of the species in western New York. Thus House, in his *Annotated List of the Ferns and Flowering Plants of New York State*, says (p. 674), under *Nabalus crepidineus* (Michx.) DC.: "Reported from Western New York. Authentic records are lacking," and Zenkert, in his *Flora of the Niagara Frontier Region* (p. 268), after quoting Day's statement, added the comment: "No corresponding herbarium specimens have been found, nor has the species been collected in recent years."

In 1843 Torrey & Gray had seen no specimens from east of Ohio; but in the Gray Herbarium there is a beautifully characteristic sheet of *P. crepidinea* correctly identified by Gray and marked in his hand: "New York: Buffalo, *Prestele*, 1844." For some inexplicable reason Gray, in the *Manual* (1848) merely took the eastern limit (Ohio) from Torrey & Gray, and the occurrence of the plant at Buffalo in 1844 was overlooked in his work until the preparation of the *Synoptical Flora*, the part covering the *Compositae* printed in 1884.—M. L. Fernald.

Volume 38, no. 451, including pages 241–272 and plate 435, was issued 10 July, 1936.

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